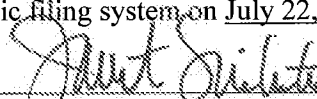


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Janet Shibata

PATENT  
PD-201006A

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Application of:

Donald C. D. Chang

Serial No. 09/858,387

Group Art Unit: 2683

Filed: May 15, 2001

Examiner: Torres, Marcos L.

For: COMMUNICATION SYSTEM FOR MOBILE USERS USING ADAPTIVE  
ANTENNAS

**BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The following Appeal Brief is submitted in response to the Notice of Appeal filed  
May 22, 2009.

**I. Real Party in Interest**

The real party in interest in this matter is The DIRECTV Group, Inc., of El Segundo, California.

**II. Related Appeals and Interferences**

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

**III. Status of the Claims**

Claims 1 and 3-22 are pending in the application and are appealed herein. Claim 2 has been cancelled.

**IV. Status of Amendments**

There have been no amendments filed subsequent to the response to the Final Office Action of September 16, 2008.

**V. Summary of Claimed Subject Matter**

Claim 1 is directed to a communication system that is generally illustrated in Figure 1 for communicating with mobile user terminal 16M. The system is generally described on page 5, lines 3-14.

The communication system includes a base station 18 described on page 5, line 26 through page 6, line 15 having an adaptive antenna 30 that is generally described on page 6, lines 1-5 and is illustrated in Figure 1. The adaptive antenna 30 has a plurality of panels 52 that are illustrated in Figures 2A-2D and is described on page 6, line 22 through page 9, line 23. Each of the panels 52 have a plurality of main array elements 56 or 222 of Figure 13 which are described on page 19, lines 8-25. Each panel has a different field of view. The main array elements 56 simultaneously generate a plurality of dynamic communication beams that move with the mobile terminals. This is generally described on page 6, line 22 through page 7, line 7.

The communication system 10 further includes a gateway station 20 that is described on page 6, lines 6-10 and page 6, lines 16-21. This is also illustrated in Figure 1. The gateway station 20 is coupled to a base station 18. The gateway station 20 forms a plurality of beam commands for each of the plurality of panels by communicating the plurality of control signals to the base station to form the plurality of dynamic communication beams.

This is generally illustrated in Figures 8 and 13 and is described on page 12, line 18 through page 13, line 2 and page 20, lines 5-6.

Claim 3 depends on claim 1 and is generally illustrated in Figure 13. Claim 3 recites that the base station comprises a plurality of auxiliary elements 224 for cancelling interference between the plurality of dynamic communication beams. This is described on page 19, line 8 through page 20, line 9.

Claim 4 depends from claim 3 and recites that the plurality of auxiliary elements are weighted to provide interference cancelling. This is also illustrated in Figure 3 and is described on page 19, lines 21-25.

Claim 5 depends from claim 1 and recites that the gateway station 20 is RF coupled to the base station. This is described on page 6, lines 1-5.

Claim 6 depends from claim 1 and recites that the base station is wireless. This is described on page 6, line 4.

Claim 7 depends from claim 1 and recites that the gateway station 20 is positioned on the stratospheric platform. This is described on page 21, line 21.

Claim 8 depends from claim 1 and recites that the adaptive antenna 30 comprises a phased array antenna. This is described on page 7, lines 15-19.

Claim 9 depends from claim 1 and recites that the main array elements are modular and that each of the elements of each one of the panels covers the same field of view. This is illustrated in Figure 3 and is described on page 9, line 24 through page 10, line 2.

Claim 10 depends from claim 1 and recites that the main array antenna elements comprise a plurality of modules coupled to a bus. This is illustrated in Figure 3 and is described on page 9, line 24 through page 10, line 2. The bus is illustrated as reference numeral 60.

Claim 11 depends from claim 8 and recites that the bus 60 is coupled to a controller 68. This is also illustrated in Figure 3 and is described on page 9, line 24 through page 10, line 2.

Claim 12 depends from claim 1 and recites that the plurality of user terminals receives the plurality of dynamic communication beams. This is illustrated in Figure 1 and is described in on page 5, line 5-14.

Claim 13 depends from claim 1 and further comprises a limiter 176 coupled within a feedback path. This is illustrated in Figure 11 and is described on page 15, lines 22-24.

Claim 14 depends from claim 1 and recites a nulling processor. This is illustrated in Figure 13 and is described on page 19, lines 8-25.

Claim 15 depends from claim 14 and recites that the nulling processor comprises an element code despread 114 and a user code despread 120.

Claim 16 depends from claim 15 and recites that the nulling processor comprises a weighted feedback loop coupled to an output signal. This is described on page 19, lines 8-25.

Claim 17 depends from claim 15 and recites that the nulling processor comprises auxiliary elements coupled to an output signal. The auxiliary elements are illustrated as reference numeral 224 and are described on page 19, line 8 through page 20, line 9.

Claim 18 depends from claim 1 and recites that the base station 18 comprises a plurality of summing blocks 90 coupled to the main array element 74 for generating a sum signal. This is illustrated in Figure 7 and is described on page 12, lines 9-17. Claim 18 further recites that the gateway station 20 comprises an analog-to-digital converter 106 coupled to a noise injection circuit and the sum signal. The sum signal is coupled to a demultiplexer 108 and a digital beam forming circuit. The elements of the gateway station described above are illustrated in Figure 8 and are described on page 12, line 18 through page 13, line 2.

Claim 19 depends from claim 1 and recites that the base station comprises a user code desreading circuit 114 coupled to an element code desreading circuit 120 which is coupled to the main array elements 56 or 222. This is illustrated in Figure 9 and is described on page 13, line 10 through page 14, line 7.

Claim 20 is an independent claim that includes a plurality of wireless base stations 18 described on page 5, line 26 through page 6, line 15. The base stations have adaptive antennas 30 each having a plurality of panels 52 that are illustrated in Figures 2A-2D and are described on page 6, line 22 through page 9, line 23. Each panel 52 has a plurality of main array elements 56 or 222 of Figure 13. Each panel has a different field of view. The main array elements are also described on page 19, lines 8-25. Each panel simultaneously generates a plurality of dynamic communication beams that move with the mobile terminals. This is described on page 6, line 22 through page 7, line 7.

Claim 20 also includes a gateway station 20 coupled to the plurality of wireless base stations through a plurality of multiple dynamic links. The gateway station forms a plurality

of beams for each of the plurality of panels by communicating a plurality of control signals to the base station from the plurality of dynamic communication beams so that a user receives a first link from a first base station of the plurality of wireless base stations in a second link from the second base station of the plurality of wireless base stations. This is generally shown in Figures 8 and 13 and is described on page 12, line 18 through page 13, line 2. This is also described on page 20, lines 5-6.

Claim 21 is an independent claim that is directed to a method of operating a communication system having a gateway station 20 coupled to a plurality of mobile terminals 16M in a plurality of base stations 18. The method includes that the gateway station 20 dividing a communication signal into a control signal corresponding to a plurality of elements of a plurality of panels 52 of a plurality of adaptive antennas 30 of the plurality of base stations 18. The control signals correspond to a plurality of multiple dynamic links. The base station is illustrated in Figure 1 and is described on page 5, line 26 through page 6, line 15. The adaptive antennas are illustrated as reference numeral 30 in Figure 1 and are described on page 6, lines 1-5. The plurality of panels are illustrated as reference numeral 52 in Figures 2A-2B and are described on page 6, line 22 through page 9, line 23 as having different fields of view.

Claim 21 further recites the step of directing the control signals to the plurality of base stations 18. This is described on page 20, lines 5-6.

Claim 21 further recites generating multiple dynamic links from the plurality of panels of the plurality of base stations so that more than one dynamic link is generated simultaneously from one panel that moves with the mobile terminals. This is described on page 7, line 13-20.

Claim 22 depends from claim 21 and recites the further step of cancelling interference between the multiple dynamic links. This is illustrated in Figure 13 and is described on page 19, lines 21-25.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

The following issues are presented in this appeal:

Whether Claims 1, 3-12, 14, and 20-22 are unpatentable under 35 U.S.C. §103(a) over *Gross* (6,507,739) in view of *Murray* (5,666,128).

Whether Claim 13 is unpatentable under 35 U.S.C. §103(a) over *Gross* (6,507,739) in view of *Murray* (5,666,128) and in further view of *Kasperkovitz*.

Whether Claims 15-17 and 19 are unpatentable under 35 U.S.C. §103(a) over *Gross* (6,507,739) in view of *Murray* (5,666,128) and in further view of *Agee* (6,128,276).

Whether Claim 18 is unpatentable under 35 U.S.C. §103(a) over *Gross* (6,507,739) in view of *Murray* (5,666,128) and in further view of *Janc* (4,893,310) and *Sayegh* (2006/0084541A).

## VII. Argument

### **The rejection of Claims 1, 3-12, 14, 20-22 as unpatentable under 35 U.S.C. §103(a) over *Gross* (6,507,739) in view of *Murray* (5,666,128)**

#### *Claim 1*

Claim 1 recites a base station having an adaptive antenna with a plurality of panels. Claim 1 was amended to recite that the plurality of panels are arranged to have different fields of view. On page 6 of the Office Action, the Examiner states that the term “field of view” can be interpreted in several ways such as pointing field of view or coverage [area] field of view. The Examiner refers to Fig. 1 and item 140 of the *Gross* reference. Appellants believe that the terminology field of view is evident from the specification. In particular, Fig. 40 and Fig. 2A both refer to the field of view. Paragraph 71 also mentions the field of view in that the elements share the same field of view as every other element on the panel. Also, the claim states, “each of the plurality of panels arranged to have a different field of view.” Thus it is clear that the panels each have different fields of view over the array of elements. When taken in context, the plurality of dynamic beams moves with the mobile terminals. The field of view is the extent that a particular panel can track a user. Beyond the field of view, the next panel must be used. Thus, Appellants believe that the field of view is narrower than the definition suggested by the Examiner.

The *Gross* reference includes panels that are pointed in the same direction. Appellants believe that the panels have the same field of view. Likewise, the *Murray* reference also has an antenna with a number of smaller panels as described in column 4, lines 34-55. A number of radiating tiles each may include an antenna. It appears that each of the tiles is facing in the same direction from each of the sections 18. Therefore, each of these tiles has the same field of view as well. This is different than the present application which

has a plurality of panels each of the panels has a different field of view so that when a user moves beyond the field of view of one panel, another panel is used for communicating with the user.

The Examiner points to the *Murray* reference at column 4, lines 39-40 for a plurality of panels of an adaptive antenna. While more than one panel is illustrated, it appears that the fields of view of the panels are the same. Claim 1 and the other independent claims were also amended to clarify that the adaptive antenna has a plurality of panels that are arranged to have different fields of view.

***Claim 3***

Claim 3 recites that the “base station comprises a plurality of auxiliary elements for canceling interference between the plurality of dynamic communication beams.” The Examiner points to column 4, lines 38-64 of the *Gross* reference for this teaching. Column 4, lines 49-53 are particularly relevant. In this passage, the shaping of beams, such as the shaping of the main lobe and sides lobes, is described. What is not taught or suggested in *Gross* is that auxiliary elements are used for cancelling interference between the plurality of dynamic communication beams. Therefore, Appellants respectfully request the Board to reverse the Examiner’s rejection of claim 3.

***Claim 4***

Claim 4 depends from claim 3 and recites that the auxiliary elements are weighted to provide interference cancelling. The Examiner points to column 4, lines 38-64 of the *Gross* reference for this teaching. As mentioned above, there is no teaching for a “plurality of auxiliary elements,” let alone a “plurality of auxiliary elements [that] are weighted to provide interference canceling,” as set forth in claim 4. Therefore, Appellants respectfully request the Board to reverse the Examiner’s position with respect to claim 4 as well.

***Claim 5***

Claim 5 includes the gateway station being RF coupled to the base station. Claim 5 stands or falls with claim 1.

***Claim 6***

Claim 6 recites that the base station is wireless. Claim 6 stands or falls together with claim 1.

***Claim 7***

Claim 7 depends from claim 1 and recites that the “gateway station is positioned on a stratospheric platform.” The Examiner points to column 3, lines 55-63 for a stratospheric platform. However, this passage merely refers to terrestrial-based equipment or satellites and not a stratospheric platform. A stratospheric platform is different than a satellite because a stratospheric platform is positioned substantially lower than a satellite: a stratospheric platform may be positioned in the range of about 60,000-100,000 feet above the earth’s surface versus a low-earth-orbit satellite positioned about 700 miles above the surface of the earth. Therefore, the Board is respectfully requested to reverse the Examiner’s position with respect to claim 7.

***Claim 8***

Claim 8 recites that the antenna is a phased array antenna. This claim stands or falls together with claim 1.

***Claim 9***

Claim 9 recites that the main array elements are modular and that each of the elements of each of the panels cover the same field of view. Column 1, lines 4-8 and column 4, lines 46-58 of *Murray* does mention array antennas that are modular but the field of view is not described. Also, no teaching or suggestion is provided for combining the *Murray* reference with the *Gross* reference. Appellants, therefore, respectfully request the Board to reverse the Examiner’s position with respect to claim 9.

***Claim 10***

Claim 10 recites that the main array antenna elements comprise a plurality of modules coupled to a bus. The Examiner points to the *Gross* reference at Figure 2, Items 202-214 for teaching a bus. The description of Figure 2 begins in column 3, line 56 through column 5, line 36 and there appears to be no teaching or suggestion that the components are coupled together through a bus. The various components appear to be in communication but not through a bus. Appellants, therefore, respectfully request the Board to reverse the Examiner’s position with respect to claim 10 as well.

***Claim 11***

Claim 11 depends from claim 10 and recites that a bus is coupled to the controller. The Examiner points to the same elements in *Gross* for the bus as in the rejection of claim 10. Although computing equipment is taught in the *Gross* reference, no teaching or



suggestion is provided for a bus coupled to a controller. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 11.

***Claim 12***

Claim 12 depends from claim 1 and further recites a plurality of user terminals receiving the plurality of dynamic communication beams. Claim 12 stands or falls together with claim 1.

***Claim 14***

Claim 14 stands or falls together with claim 1.

***Claim 20***

Claim 20 is similar to claim 1 in that each of the panels may generate more than one dynamic link from a panel. Claim 20 is different in that two links from two different base stations are directed to a user. As mentioned above, the *Gross* and *Murray* references have several deficiencies. Claim 20 is also different in that it recites "a plurality of wireless base stations" and that the "gateway station ... [communicates] a plurality of a control signals to the base station to form the plurality of dynamic communication beams so that a user receives at least a first link from a first base station of the plurality of wireless base stations and a second link from a second base station of the plurality of wireless base stations." The wireless base stations having antenna elements with fields of view are discussed above in the arguments for claim 1.

Claim 20 recites "a plurality of wireless base stations." The Examiner points to element 110 for a plurality of wireless base stations; however, element 110 refers to a satellite. As mentioned above, claim 20 recites that "each of the plurality of panels [are] arranged to have a different field of view." This is not taught or suggested in the *Gross* reference. For the gateway station, the Examiner, again, points to element 110 and a number of different passages. One passage is column 10, lines 8-36, which refers to Figure 9. Figure 9 illustrates the relative motion of a satellite footprint. The motion is illustrated by the arrow 904. Although handoffs are described, there is no teaching for a gateway station that communicates control signals to the base stations to form dynamic links so that a user receives at least a first link from a first base station and a second link from a second base station. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 20 as well.

***Claim 21***

Claim 21 is another independent claim that is directed to a method similar in scope to claim 20. In fact, claim 21 recites “generating multiple dynamic links from the plurality of panels of the plurality of base stations so that more than one dynamic link is generated simultaneously from one panel that moves with the mobile terminals.” As mentioned above, neither reference teaches or suggests simultaneously generating more than one beam from a panel. Therefore, Appellants respectfully request the Board to reverse the Examiner’s position with respect to claim 21 as well.

***Claim 22***

Claim 22 depends from claim 21 and recites interference cancelling. Although interference cancelling is known, there is no teaching or suggestion for interference cancelling between multiple dynamic links with the limitations set forth in claim 21. In fact, *Gross* column 3, lines 23-32 teaches interference resistant channels that have sidelobe properties that minimize inference. However, there is no teaching or suggestion for actively cancelling interference between the multiple dynamic links, rather than just minimizing interference, as set forth in the column 3. Therefore, Appellants respectfully request the Board to reverse the Examiner’s position with respect to claim 22 as well.

***The rejection of claims 9-10 under 35 U.S.C. §103(a) over Gross (6,507,739)  
in view of Murray (5,666,128) and in further view of Kasperkovitz***

***Claim 13***

Claim 13 depends from claim 1 and recites a limiter coupled within a feedback path. As mentioned above, the *Gross* and *Murray* references have several limitations. The *Kasperkovitz* reference is directed to a phase lock loop for a directly mixing synchronous AM receiver. Claim 13 recites that a limiter is coupled to a feedback path. Appellants agree that a limiter LA is shown in Fig. 1. However, the limiter is not in a feedback path. A feedback path feeds the output of a control system back to an input to the control system. In the Final Office Action, the Examiner states that “Regarding Appellants’ argument that *Kasperkovitz* does not teach a limiter in a feedback path, claim 13 recites a limiter coupled within a feedback path.” Still, Appellants respectfully submit that the limiter must be within the feedback path. Therefore, no teaching or suggestion is provided for a limiter in a feedback

path. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claim 13.

***The rejection of claims 15-17 and 19 under 35 U.S.C. §103(a) over Gross (6,507,739) in view of Murray (5,666,128) in further view of Agee (6,128,276)***

***Claim 15***

Claim 15 recites that the nulling processor comprises an element code despread and a user code despread. The Examiner points to column 23, lines 7-29 and column 11, lines 33-48. Claim 15 specifically recites element code despread and user code despread. Although despread is mentioned, no teaching or suggestion is provided for element code despread and user code despread as set forth in claim 15. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 15.

***Claim 16***

Claim 16 depends from claim 15 and recites that a weighted feedback loop is coupled to an output signal. Weighting is also specifically set forth in column 11 of the *Agee* reference. However, the weighting illustrated in Figure 8 as reference numeral 240 does not appear to be within a feedback loop. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 16 as well.

***Claim 17***

Claim 17 recites that the nulling processor comprises auxiliary elements coupled to an output signal. Appellants can find no teaching or suggestion for auxiliary elements in the *Agee* reference. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 17 as well.

***Claim 19***

Claim 19 recites that the base station comprises a user code de-spreading circuit coupled to an element code de-spreading circuit which is coupled to the main array elements. As mentioned above with respect to claim 15, there is no teaching or suggestion for user code de-spreading and element code de-spreading. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claim 19 as well.

***The rejection of claim 18 under 35 U.S.C. §103(a) over Gross (6,507,739) in view of Murray (5,666,128) and further in view of Janc (U.S. Patent No. 4,893,316) and further in view of Sayegh (U.S. Pub. 20060084541A)***

***Claim 18***

Although the additional two references provide some of the teachings, each of these references does not provide the elements missing from the *Gross and Murray* references nor the motivation to form the combination. That is, no teaching or suggestion is provided in any of the additional two references for forming an adaptive antenna with a plurality of panels, each having a plurality of reconfigurable main array elements for generating a plurality of communication beams that are formed by control signals from a gateway station that form beam commands for each of the plurality of panels. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claim 18 as well.

**VIII. Claims Appendix**

A copy of each of the claims involved in this appeal, namely claims 1 and 3-22 is attached as a Claims Appendix.

**IX. Evidence Appendix**

None.

**X. Related Proceedings Appendix**

None.

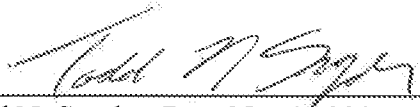
**XI. Conclusion**

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to Deposit Account 50-0383.

Respectfully submitted,

Dated: July 22, 2009

By:   
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**CLAIMS APPENDIX**

1. (Previously Presented) A communications system for communicating with mobile user terminals comprising:

a base station having an adaptive antenna with a plurality of panels, each of the plurality of panels arranged to have a different field of view, each panel having a plurality of main array antenna elements for simultaneously generating a plurality of dynamic communication beams that move with the mobile terminals; and

a gateway station coupled to said base station, said gateway station forming a plurality of beams commands for each of the plurality of panels by communicating a plurality of control signals to the base station to form the plurality of dynamic communication beams.

3. (Previously Presented) A communications system as recited in claim 1 wherein said base station comprises a plurality of auxiliary elements for canceling interference between the plurality of dynamic communication beams.

4. (Previously Presented) A communications system as recited in claim 3 wherein said plurality of auxiliary elements are weighted to provide interference canceling.

5. (Original) A communications system as recited in claim 1 wherein said gateway station is RF coupled to said base station.

6. (Original) A communications system as recited in claim 1 wherein said base station is wireless.

7. (Previously Presented) A communications system as recited in claim 1 wherein said gateway station is positioned on a stratospheric platform.

8. (Previously Presented) A communications system as recited in claim 1 wherein said adaptive antenna comprises a phased array antenna.

9. (Previously Presented) A communications system as recited in claim 1 wherein said main array antenna elements are modular and wherein the main array elements for each one of the plurality of panels covers the same field of view.

10. (Previously Presented) A communications system as recited in claim 1 wherein said main array antenna elements comprise a plurality of modules coupled to a bus.

11. (Previously Presented) A communications system as recited in claim 10 wherein said bus is coupled to a controller.

12. (Previously Presented) A communications system as recited in claim 1 further comprising a plurality of user terminals receiving said plurality of dynamic communication beams.

13. (Original) A communications system as recited in claim 1 further comprising a limiter coupled within a feedback path.

14. (Original) A communications system as recited in claim 1 further comprising a nulling processor.

15. (Original) A communications system as recited in claim 14 wherein said nulling processor comprises an element code despread and a user code despread.

16. (Previously Presented) A communications system as recited in claim 15 wherein said nulling processor comprises a weighted feedback loop coupled to an output signal.

17. (Original) A communications system as recited in claim 15 wherein said nulling processor comprises auxiliary elements coupled to an output signal.

18. (Original) A communications system as recited in claim 1 wherein said base station comprises a plurality of summing blocks coupled to said main array element for generating a summed signal, said gateway station comprising an analog-to-digital converter coupled to a noise injection circuit and said summed signal, said summed signal coupled to a demultiplexer and a digital beam forming circuit.

19. (Original) A communication system as recited in claim 1 wherein said base station comprises a user code despreding circuit coupled to an element code despreding circuit which is coupled to said main array elements.



20. (Previously Presented) A communications system for communicating with mobile user terminals comprising:

a plurality of wireless base stations having adaptive antennas each having a plurality of panels, each of the plurality of panels arranged to have a different field of view, each panel having a plurality of main array antenna elements, each panel simultaneously generating a plurality of dynamic communication beams that move with the mobile terminals;

a gateway station coupled to said plurality of wireless base stations through a plurality of multiple dynamic links, said gateway station forming a plurality of beams for each of the plurality of panels by communicating a plurality of a control signals to the base station to form the plurality of dynamic communication beams so that a user receives at least a first link from a first base station of the plurality of wireless base stations and a second link from a second base station of the plurality of wireless base stations.

21. (Previously Presented) A method of operating a communication system having a gateway station, a plurality of mobile terminals and a plurality base station comprising:

at the gateway station, dividing a communication signal into a control signal corresponding to a plurality of elements of a plurality of panels of a plurality of adaptive antennas of a plurality of base stations, the plurality of panels each arranged to have a different field of view, said control signals corresponding to a plurality of multiple dynamic links;

directing the control signals to the plurality of base stations; and

generating multiple dynamic links from the plurality of panels of the plurality of base stations so that more than one dynamic link is generated simultaneously from one panel that move with the mobile terminals.

22. (Original) A method as recited in claim 21 further comprising canceling interference between said multiple dynamic links.

**IX. Evidence Appendix**

None.

**X. Related Proceedings Appendix**

None.